NEW YORK STATE

DEPARTMENT OF TRANSPORTATION

Materials Bureau

"SAMPLING AND STOCK LOT CONTROL of POLYVINYL CHLORIDE EXTRUDED SHAPES AND SHEET MATERIAL"

I. INTRODUCTION

This method describes specific procedures for the SAMPLING AND STOCK LOT CONTROL OF POLYVINYL CHLORIDE EXTRUDED SHAPES AND SHEET MATERIAL manufactured for Department projects. It encompasses an inventory control system whereby material is accepted in stock lots for eventual shipment to Department projects, thereby eliminating the need of individual shipment inspection and jobsite sampling. This procedure benefits Department projects by assuring that acceptable material is available for incorporation into project work. The control system is implemented by sampling and testing material in stock lots as it is manufactured. After sampling and proper identification, through the use of Department seals, the material is tested by the Department. If found acceptable, it is identified as such and released for shipment to Department projects as required.

II. DEFINITIONS

1. MANUFACTURER

A company actually engaged in the production of Polyvinyl Chloride products at a given location.

2. DEPARTMENT

The New York State Department of Transportation.

3. MATERIALS BUREAU

A facility of the New York State Department of Transportation located in Albany, New York.

4. INSPECTION AUTHORITY

An office designated by the Materials Bureau as responsible for inspection control on behalf of the Department at specific manufacturers.

5. PLANT INSPECTOR

An individual employed by the Inspection Authority and approved by the Materials Bureau to function on inspection assignments on behalf of the Department.

6. PROJECT INSPECTOR

An individual assigned by the Department's Project Engineer to function on inspection assignments at the project.

7. PVC

Abbreviated term used in referring to Polyvinyl Chloride extruded shapes and sheet material.

8. FOAM INSERT

A Polyvinyl Chloride closed cell foam material fabricated into PVC shape, Type "E", after both PVC shape and the insert are accepted.

9. LOT

A lot shall consist of and be limited to:

a. One single type or size of PVC shape. For Type "E" PVC the foam insert and PVC shape shall be considered as one lot.

b. Virgin plastic extrusion compound from a single batch or lot.

c. The maximum quantity produced in one continuous extrusion process.

d. Only one size unit (as described below). Each lot of PVC offered for Department use is assigned a lot number by the manufacturer. The lot number shall be assigned consecutively, regardless of

DEFINITIONS (continued)

the type of PVC, and shall start with "1" at the beginning of each calendar year. This lot number series shall be reserved for Department lots only.

10. UNIT

A single roll of PVC consisting of either 50 or 100 foot lengths. Each unit of PVC shall contain no splices and shall be securely banded with non-metallic material so as not to cause injury to the finished product. For Type "E" PVC foam inserts, the unit shall be one carton of inserts.

11. SEALS

Tape and metal devices, as described below, to insure product identification of sampled and/or accepted material. These seals are furnished to the Inspector by the Department.

a. Red Tape Seal

A red, tamper-proof tape seal imprinted "N.Y.S. SAMPLED."

b. Green Tape Seal

A green, tamper-proof tape seal imprinted "N.Y.S. ACCEPTED."

c. Red Metal Seal

A red metal, tamper-proof seal imprinted "N.Y.S. SAMPLED."

d. Green Metal Seal

A green metal, tamper-proof seal imprinted "N.Y.S. ACCEPTED."

12. FORMS

The following forms are published and issued by the Department for use by the Materials Bureau and Inspection Authorities.

NYSDOT
Library
50 Wolf Road, POD 34
Albany, New York 12232

DEFINITIONS (continued)

a. BR-240 - Sample and Acceptance Transmittal

This form transmits the Inspector's sample information to the Materials Bureau and, upon validation, conveys acceptance action to the Inspector. Detailed instructions for proper completion and transmittal are contained in Materials Method N.Y. 18.1.

b. BR-241 - Transmittal Envelope

This is a heavy-duty envelope used to contain the BR-240.

13. SAMPLE FREQUENCY

The number of units of PVC product to be sampled for each lot is outlined in the following sample table:

Sampling Table

Lot Size (No. of Units)	Number of Units Sampled	Lot rejection will occur when number of sample failures equal or exceeds
1-15	2	1
16-25	3	1
26-90	5	1
91-150	8	1
151-280	13	2
281-500	20	2

NOTE: When Type "E" PVC, the sampling frequency shall be applied separately to both the PVC shape and the cartons of foam insert.

14. SAMPLE SIZE

The amount of PVC product selected from each unit sampled shall be three feet for the first two units sampled and 6 inches for any additional unit sampled. The sample size for Type "E" foam inserts shall be three feet from each carton sampled.

III. EVIDENCE OF ACCEPTABILITY

1. At Manufacturing Plant

   A green copy of Form BR-240 in the possession of the Inspector, properly noted with the word "accepted" and validated by the Materials Bureau.

2. At Project Location

   a. A red metal seal and a green metal seal attached to each unit in the shipment.

   b. The manufacturer's name, lot number, and PVC shape or type imprinted on each unit.

   c. The test number appearing on each unit, either imprinted on the unit itself or on a tag attached to the unit.

IV. SPLICES

(See Page No. 10 for splice inspection procedure where applicable)

V. STEPS IN PROCEDURE

Responsibility	Action
Manufacturer	1. Assigns a lot number to the item to be produced, in accordance with DEFINITION OF A LOT.
	2. Produces and packages the required material.
	a. During production, imprints on the material, at no more than five foot intervals with indelible ink, the manufacturer's name, lot number, and PVC shape or type.
	3. Stores the material in an easily accessible area.
	4. Notifies the Inspection Authority designated by the Department that a lot of material is ready for sampling.

STEPS IN PROCEDURE (continued)

Responsibility		Action
Inspection Authority	5.	Schedules an inspection call.
	6.	Assigns an Inspector to make a call.
Plant Inspector	7.	Ascertains that the material is stored in an accessible location.
	8.	Determines that the material is packaged and identified in accordance with the definitions of lot and unit.
	9.	Determines that the material is imprinted as described in Step 2a above.
	10.	Consult the term Sample Frequency under definitions on Page No. 4 to determine the number of units to be sampled.
	11.	Selects, according to the random number table, the units to be sampled. The table and instructions for its use are on Page No. 13
		a. If Type "E" PVC, in addition to sampling the PVC shape, also selects cartons of foam insert.
	12.	Cuts a three foot sample of PVC from the first two units selected and a six inch sample from any additional unit selected.
		a. Selects, if Type "E" foam insert, one length of foam insert from each carton. If less than three cartons in the lot, three lengths must be selected from the carton(s) available.
		b. Cuts a three foot sample from each length selected.

STEPS IN PROCEDURE (continued)

Responsibility	Action
Plant Inspector	13. Identifies the samples of PVC by indelibly marking each with the following information: a. Manufacturer b. Lot Number c. Item Number d. Type of Material
	14. Supervises the repackaging of the sampled units.
	15. Seals each unit in the lot by punching a hole in the end of the PVC material, passing a sealing wire through this hole and affixing to that wire a red metal seal. a. If Type "E" shape, closes sampled cartons of foam insert with any available means, i.e. tape, staples. Seals all opening in each carton in the lot with red tape seals.
	16. Completes Form BR-240 according to Materials Method N.Y. 18.1. Includes in Box # 16: a. Unit size b. Number of units in lot c. Number of samples
	17. Packages samples, including Form BR-240 enclosed in BR-241 envelope for transmittal to the Materials Bureau. a. If transmitted by means not authorized by the Materials Bureau, such as air freight, expense must be borne by the manufacturer. Box # 16 of the BR-240 shall be

STEPS IN PROCEDURE (continued)

Responsibility		Action
Plant Inspector	17.	a. noted "Samples sent by Supplier." The samples themselves must be sealed by the Inspector, using a red metal seal on a wire passing through a hole punched in the sample.
	18.	Makes the necessary entries in his records as to manufacturer, product type, item number, date sampled, etc.
	19.	Transmits the samples for testing to the Materials Bureau.
Materials Bureau	20.	Performs required tests and accepts or rejects the lot on the basis of test results.
	21.	Indicates action on and validates Form BR-240.
	22.	Issues green copy and yellow copy of Form BR-240 to Inspection Authority.
		a. Telephone requests to the Materials Bureau, in advance of normal notifications of action, will be honored only when received from the inspector.
Inspection Authority	23.	Receives green copy and yellow copy of Form BR-240, marked accepted or rejected, from the Materials Bureau.
	24.	Retains the yellow copy and advances the green copy of Form BR-240 to the Inspector.
	25.	Notifies the manufacturer of action taken by the Materials Bureau.
		a. If the material is REJECTED on a subsequent routine visit to the plant, the Inspector will remove all red metal seals and attaching wires from the units of the rejected lot.

STEPS IN PROCEDURE (continued)

Responsibility		Action
Inspection Authority	26.	Assigns Inspector to seal acceptable material. NOTE: For Type "E" PVC it is not necessary, at this time, to assign an Inspector to place an acceptance seal on the material. For Type "E" PVC, the procedures under "Splicing" on Page 10 should be followed. The installation of the foam insert into the Type "E" shape should be considered similar to splicing units of PVC shapes. All procedures outlined under "Splicing," as to removing seals, checking inventories and resealing of accepted material should be followed. In addition, the Inspector should determine that the insert fits the Type "E" shape and that the insert is firmly bonded on three sides to the Type "E" shape before the material is resealed.
Plant Inspector	27.	Applies green metal seal to each unit by affixing it to the sealing wire containing the red metal seal.
	28.	Supervises the manufacturer in affixing a tag containing the test number to the sealing wire on each unit or in printing the test number with indelible ink on each unit.
Manufacturer	29.	Makes shipments from the accepted lot without further documentation or supervision of the Inspector.
	30.	Maintains a record of shipments of all Department accepted material. These records should include Department item number, test number, lot number, quantities shipped and shipping destination.
	31.	Provides shipment record to the Department upon request.

STEPS IN PROCEDURE (continued)

Responsibility		Action
Project Inspector	32.	Satisfies himself that the required seals, as described under "Evidence of Acceptability," on Page 5 are intact on each unit.
	33.	Consults MURK for additional information concerning acceptances.

VI. SPLICES

All splices, whether made in the field, manufacturer's plant, or distributor's warehouse, will be the responsibility of the Engineer, as to quality conformance. If fabrication is done at the manufacturer's plant or distributor's warehouse, the fabricated unit will be sealed by the Plant Inspector in the same manner as rolled units. This insures that the material used in fabrication comes from N.Y.S. accepted lots, but does not constitute splice acceptance.

STEPS IN PROCEDURE

Responsibility		Action
Manufacturer and Distributor	1.	Selects material to be fabricated from N.Y.S. accepted material.
	2.	Removes acceptance seals and retains seals for the Inspector.
	3.	Performs fabrication.
	4.	Notifies Inspection Authority that fabrication is complete.
Inspection Authority	5.	Schedules an inspection call.
	6.	Assigns an Inspector to make a call.
Plant Inspector	7.	Determines that the material used in fabrication comes from N.Y.S. accepted material by:

STEPS IN PROCEDURE (continued)

Responsibility		Action
Plant Inspector	7.	a. Determining the lot identification of the component unit(s) used for fabrication by examining the identification imprinted on the fabricated units. Verifying that component lot(s) are N.Y.S. accepted.
		b. Obtaining the seals removed from unit or units by the manufacturer prior to fabrication.
		c. Checking manufacturer's inventory against shipping records for verification of quantity used in fabrication.
	8.	If satisfied that material used in fabrication comes from N.Y.S. accepted stock, seals material with a red and green metal seal attached to a sealing wire passed through a hole punched in the end of the fabricated piece.
		a. If not satisfied that the material comes from N.Y.S. accepted stock, consults the Materials Bureau for further instruction.
	9.	Reseals any unused material in the same manner as # 8 above.
	10.	Makes the necessary entries in his records as to manufacturer, product type, and date of fabrication.
Manufacturer and Distributor	11.	Makes shipments without further documentation or supervision of the Inspector.
	12.	Maintains a record of shipments of all fabricated PVC shipped to Department projects. These records should include Department item number, test number, lot number, quantities shipped and shipping destination.

STEPS IN PROCEDURE (continued)

Responsibility		
Project Inspector	13.	Satisfies himself that the required seals, as described under "Evidence of Acceptability" on Page 5, are intact on each unit.
	14.	Consults MURK for additional information concerning acceptances.
	15.	Checks splices for conformance to Specifications.

INSTRUCTIONS:

1. Determine number of digits to be used that correspond with number of units to be sampled. (e.g. 500 units - use last three digits of each number in the table - 9685)

2. Starting anywhere in the table, select the units to be sampled by reading the numbers consectively that do not exceed total number of units in the lot.

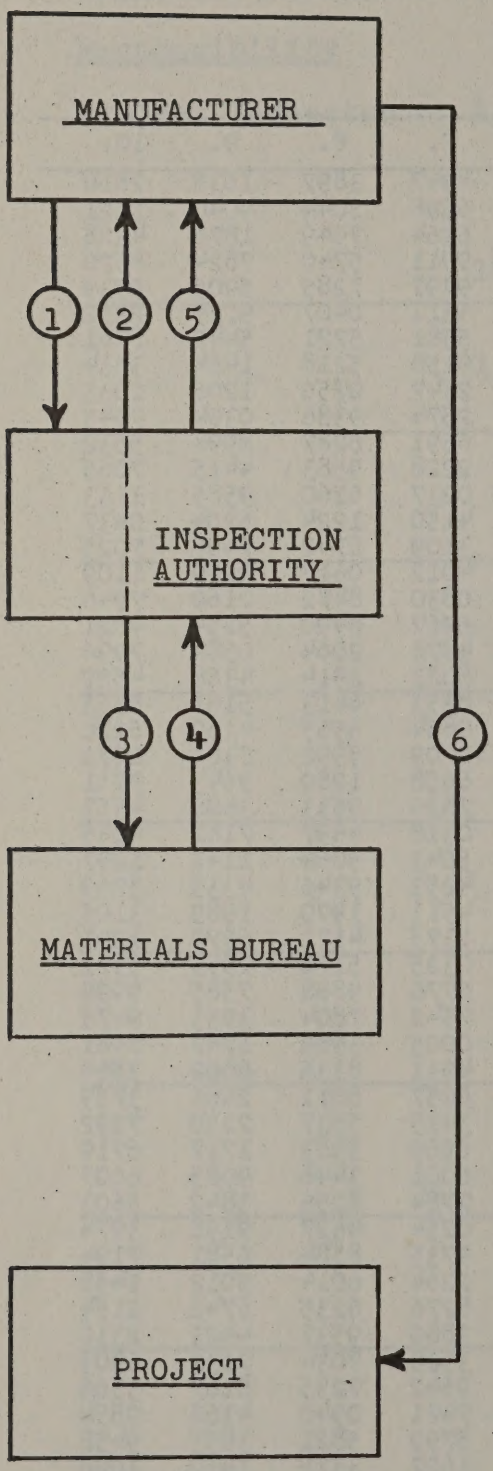
(EXAMPLE - 500 units to be sampled with 5 samples needed. Presume you start on line 27, column 3 (#685). Since 685 is larger than the number of units in lot, go down col. 3 selecting numbers 64, 32, 187, 37 and 110. When counting units in lot, those units corresponding to these numbers would be sampled.)

RANDOM NUMBER TABLE

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.	1306	1189	5731	3968	5606	5084	8947	3897	1636	7810
2.	0422	2431	0649	8085	5053	4722	6598	5044	9040	5121
3.	6597	2022	6168	5060	8656	6733	6364	7649	1871	4328
4.	7965	6541	5645	6243	7658	6903	9911	5740	7824	8520
5.	7695	6937	0406	8894	0441	8135	9797	7285	5905	9539
6.	5160	7851	8464	6789	3938	4197	5511	0407	9239	2232
7.	2961	0551	0539	8288	7478	7565	5581	5771	5442	8761
8.	1428	4183	4312	5445	4854	9157	9158	5218	1464	3634
9.	3666	5642	4539	1561	7849	7520	2547	0756	1206	2033
10.	6543	6799	7454	9052	6689	1946	2574	9386	0304	7945
11.	9975	3080	7423	3175	9377	6951	6591	8287	8994	5532
12.	4866	0956	7545	7723	8085	4948	2228	9583	4415	7065
13.	8239	7068	6694	5168	3117	1586	0237	6160	9585	1133
14.	8722	9191	3386	3443	0434	4586	4150	1224	6204	0937
15.	1330	9120	8785	8382	2929	7089	3109	6742	2468	7025
16.	2296	2952	4764	9070	6356	9192	4012	0618	2219	1109
17.	3582	7052	3132	4519	9250	2486	0830	8472	2160	7046
18.	5872	9207	7222	6494	8973	3545	6967	8490	5264	9821
19.	1134	6324	6201	3792	5651	0538	4676	2064	0584	7996
20.	1403	4497	7390	8503	8239	4236	8022	2914	4368	4529
21.	3393	7025	3381	3553	2128	1021	8353	6413	5161	8553
22.	1137	7896	3602	0060	7850	7626	0854	6565	4260	6220
23.	7437	5198	8772	6927	8527	6851	2709	5992	7383	1071
24.	8414	8820	3917	7238	9821	6073	6658	1280	9643	7761
25.	8398	5224	2749	7311	5740	9771	7826	9533	3800	4553
26.	0995	8935	2939	3092	2496	0359	0318	4697	7181	4035
27.	6657	0755	9685	4017	6581	7292	5643	5064	1142	1297
28.	8875	8369	7868	0190	9278	1709	4253	9346	4335	3769
29.	8399	6702	0586	6428	7985	2979	4513	1970	1989	3105
30.	6703	1024	2064	0393	6815	8502	1375	4171	6970	1201
31.	4730	1653	9032	9855	0957	7366	0325	5178	7959	5371
32.	8400	6834	3187	8688	1079	1480	6776	9888	7585	9998
33.	3647	8002	6726	0877	4552	3238	7542	7804	3933	9475
34.	6789	5197	8037	2354	9262	5497	0005	3986	1767	7981
35.	2630	2721	2810	2185	6323	5679	4931	8336	6662	3566
36.	1374	8625	1644	3342	1587	0762	6057	8011	2666	3759
37.	1572	7625	9110	4409	0239	7059	3415	5537	2250	7292
38.	9678	2877	7579	4935	0449	8119	6969	5383	1717	6719
39.	0882	6781	3538	4090	3092	2365	6001	3446	9985	6007
40.	0006	4205	2389	4365	1981	8158	7784	6256	3842	5603
41.	4611	9861	7916	9305	2074	9462	0254	4827	9198	3974
42.	1093	3784	4190	6332	1175	8599	9735	8584	6581	7194
43.	3374	3545	6865	8819	3342	1676	2264	6014	5012	2458
44.	3650	9676	1436	4374	4716	5548	8276	6235	6742	2154
45.	7292	5749	7977	7602	9205	3599	3880	9537	4423	2330
46.	2353	8319	2850	4026	3027	1708	3518	7034	7132	6903
47.	1094	2009	8919	5676	7283	4982	9642	7235	8167	3366
48.	0568	4002	0587	7165	1094	2006	7471	0940	4366	9554
49.	5606	4070	5233	4339	6543	6695	5799	5821	3953	9458
50.	8285	7537	1181	2300	5294	6892	1627	3372	1952	3028

From D. B. Owen's Handbook of Statistical Tables, 1962, Addison-Wesley, Reading, Mass., courtesy of the U. S. Atomic Energy Commission.

FLOW CHART – P V C INSPECTION



1. Notifies Inspection Authority of lot to be sampled.

2. Samples lot and identifies by using RED seals.

3. Submits sample for test using form BR 240.

4. Issues acceptance.

5. Notifies manufacturer of acceptance and identifies using green seals and labels.

6. Ships to projects for incorporation into work.

PROJECT EVIDENCE OF ACCEPTABILITY

Intact RED seals
Intact GREEN seals
Completed label

01497 LRI